

KOKORIN, V.V.

LINDE, V.V., professor: KOKORIN, V.V.; KHUGLUSHIN, A.Ya.

Qualifications of an engineer technologist. Tekst.prom. 14 no.8:  
11-13 Ag '54. (MLBA 7:10)

1. Direktor Vsesoyuznogo nauchnogo instituta tekstil'noy promyshlennosti (for Kokorin).  
(Textile industry)

KOKORIN, Vasil'y Vasil'evich; SOKOLOVA, V.Ye, redaktor; KL'KINA, E.M,  
~~tekhnicheskii redaktor.~~

[Installation, assembly, repair and adjustment of cotton ring  
spinning machines] Ustroistvo, montazh, remont i naladka kol'tse-  
priadil'nykh mashin khlopchatobumashnoi promyshlennosti. Moskva,  
Gos. nauchno-tekhn. izd-vo Ministerstva promyshl. tovarov shirokogo  
potrebleniia SSSR, 1955. 156 p. (MLRA 8:8)  
(Spinning machinery)

KOKORIN, V.V., kandidat tekhnicheskikh nauk.

Fixing flats on a carding machine. Tekst.prom. 15 no.12:32-33  
D '55. (MLRA 9:3)

(Carding machines)

KOKORIN, V.V., kandidat tekhnicheskikh nauk.

New method of spinning. Tekst. prom. 16 no.8:68 Ag '56.

(MLRA 9:10)

(Spinning)

KOKORIN, V.V.

SVYATOSLAVOV, Nikolay Ivanovich, kand.tekhn.nauk; BELYAYEV, Boris  
Alekseyevich; KOKORIN, V.V., retsenzent; KRYUKOV, V.M.,  
spetsred.; ORLOVA, L.A., red.; KNAKIN, M.T., tekhn.red.

[Cotton opening and picking equipment] Razrykhitel'no-  
trepal'nyi agregat dlia khlopka. Moskva, Gos.nauchno-tekhn.  
izd-vo lit-ry po legkoi promyshl., 1959. 130 p. (MIRA 13:3)

1. Glavnyy konstruktor zavoda Kustekstil'mash.(for Belyayev).  
(Cotton machinery)

KOKORIN, V.V.

New method of opening cotton. Inv. vys. ucheb. zav.; tekhn. tekst.  
prom. no. 3:76-80 '59. (MIRA 12:11)

1. Vsesoyuznyy nauchnyy institut tekstil'noy i legkoy promyshlennosti.  
(Cotton manufacture)

L 35906-66 ENI(m)/I/EWP(1)/EII IJP(c) JD/HW/XG  
ACC NR: AP6007360 SOURCE CODE: UR/0126/66/021/002/0311/0311

AUTHORS: Kokorin, V. V.; Chuistov, K. V.

ORG: Institute of Metal Physics, AN UkrSSR (Institut metallofiziki, AN UkrSSR)

TITLE: The initial stages of decomposition of supersaturated solid solutions Co--Ta and Co--Nb

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 2, 1966, 311-314

TOPIC TAGS: cobalt alloy, tantalum containing alloy, niobium containing alloy, x ray spectroscopy, solid solution, thermal decomposition, crystal lattice parameter

ABSTRACT: The mechanism of the initial stages of decomposition of supersaturated solid solutions of Co--Ta (8 wt % Ta) and Co--Nb (4 wt % Nb) was studied by means of x-ray analysis. The study supplements the results of D. A. Fritalen, V. P. Folkner, B. R. Barret, and R. V. Fainshteyn (Sb. Stareniye splavov, M., Metallurgizdat, 1962, str. 450). The experimental procedure is described by A. M. Yelistratov (DAN SSSR, 1949, 89, 3, 337) and Ye. G. Nesterenko and K. V. Chuistov (Sb. Voprosy fiziki metallov i metallovedeniya, No. 19, Kiev, IZD. AN UkrSSR, str. 155). The experimental results are presented graphically (see Fig. 1). The initial stages in the decomposition of supersaturated Co--Ta and Co--Nb solid solutions are characterized by the formation of plate-like regions (Gin'ye complexes). These regions are distributed

Cord 1/2

UDC: 548.4:548.73

KOKORIN, Ye.V.

Using amplitude curves of reversed microseismic logging for the  
selection of the optimal conditions for excitation. Razved.  
geofiz. no. 5:27-29 '65. (MIRA 18:9)



E7809

S/070/60/005/006/009/009  
E201/E391

9.4310 (3203, 1143, 1160)


AUTHOR: Kokorin, Ye.Yu.

TITLE: Use of the Peltier Effect in Preparation of  
Triode Junctions During Drawing of Germanium  
Monocrystals from Melt

PERIODICAL: Kristallografiya, 1960, Vol. 5, No. 6,  
pp. 957 - 958

TEXT: The method of preparing semiconductor n-p-n structures, using the Peltier effect, is analogous to the method of change of the withdrawal rate from melt. In the Peltier method the rate of growth of a germanium monocrystal is altered by passing DC pulses through the crystal. The current which causes electrons to flow across the crystallization front from the melt to the crystal is known as the "forward current": it raises the rate of growth of the crystal. The current of the opposite polarity ("reverse current") reduces the rate of growth. The possibility of using the Peltier effect in this way

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Use of the Peltier Effect in Preparation of Triode  
Junctions During Drawing of Germanium Monocrystals  
from Melt

was pointed out first by A.F. Ioffe in 1956 (Ref. 5). Pfann, Benson and Wernick (Ref. 6) described some practical applications of this idea. The present paper describes a study of the conditions necessary to produce n-p-n triodes. Germanium was melted in a graphite crucible, using high-frequency currents in an atmosphere of hydrogen. The rate of withdrawal was 3-4 mm/min and the rate of rotation of the crystal during growth was 60 r.p.m. Pure antimony and gallium were used as the alloying impurities. An n-type crystal of 10-15 mm length was drawn at the rate of 4 mm/min. Triode structures with p-regions of 15 - 70  $\mu$  thickness were obtained on passing a single reverse pulse of 80 A/cm<sup>2</sup> current density and 3-5 sec

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KHEYFETS, David Samuilovich; FURMAN, S.I., otv. red.; KOKORIN,  
Yu.I., red.; MARKOCH, K.G., tekhn. red.

["Temp-6" and "Temp-7" television receivers] Televizory  
"TEMP-6" i "TEMP-7." Moskva, Svyas'izdat, 1963. 80 p.  
(Biblioteka "Televizionnyi priem" no.10) (MIRA 17:3)

SHCHEGLOV, A.M., otv. red.; KOKORIN, Yu.I., red.; SHEFER, G.I.,  
tekhn. red.

[Operation of long-distance cable and radio relay lines]  
Tekhnicheskaya ekspluatatsiya kabel'nykh i radioreleinykh  
magistralей; sbornik stateй. Moskva, Sviaz'izdat, 1963.  
87 p. (MIRA 17:3)

ZYUKO, A.G.; PETROVICH, N.T., prof., retsenzent; FINK, L.M., prof.,  
red.; KOKORIN, Yu.I., red.; ROMANOVA, S.P., tekhn. red.

[Interference reflection and efficiency of communication  
systems] "Pomekhoustoichivost' i effektivnost' sistem  
svyazi. Moskva, Svyaz'izdat, 1963. 319 p. (MIRA 17:3)

GORON, Isaak Yevseyevich; KOKORIN, Yu.I., red.

[Construction of skeleton diagrams and level diagrams of  
radio broadcasting channels] Postroenie skeletnykh  
skhem i diagramm urovnei radioveshchatel'nykh traktov.  
Moskva, Izd-vo "Sviaz'," 1964. 23 p. (MIRA 17:7)

CHISTYAKOV, Nikolay Iosifovich; KOKORIN, Yu.I., red.; TRISHINA,  
L.A., tekhn. red.

[Tuned transistor amplifiers] Transistornye rezonansnye  
usiliteli. Moskva, Izd-vo "Sviaz'," 1964. 31 p.  
(MIRA 17:3)

KALABIN, Vladimir Sergeyevich; BORISOV, G.B., otv. red.; KOKORIN,  
Yu.I., red.

[Analysis of circuits for the reinsertion of the d.c.  
component in television] Analiz skhem vosstanovleniia po-  
stoiannoi sostavliayushchei v televidenii. Moskva, Izd-vo  
"Sviaz'," 1964. 64 p. (MIRA 17:6)



GOL'DENBERG, Lev Moiseyevich; KOKORIN, Yu.I., red.

[Principles of pulse techniques] Osnovy impul'snoi tekhniki. Izd.2., dop. Moskva, Izd-vo "Sviaz'," 1964. 431 p.  
(MIRA 17:8)

KHAYKOV, Aron Zalmanovich; KUKK, K.I., otv. red.; KOKORIN, Yu.I.,  
red.

[Power amplifiers using multicavity klystrons] Moshchnye  
usiliteli na mnogorezonatornykh klitronakh. Moskva, Izd-  
vo "Sviaz'," 1964. 167 p. (MIRA 17:11)

KHEYFETS, David Samuilovich; KOKORIN, Yu.I., red.

[The "TEMP" television receivers (models 6,7 and 6M)]  
Televizory "TEMP" (Modeli 6, 7 i 6M). Izd.2., dop. Mo-  
skva, Sviaz' 1965. 64 p. (Biblioteka "Televizionnyi  
priem," no.19) (MIRA 18:4)

DOLUKHANOV, Mark Pavlovich; KOKORIN, Yu.I., red.

[Optimal methods for signal transmission using radio communication lines] Optimal'nye metody peredachi signalov po liniyam radiosviasi. Moskva, Izd-vo Sviaz', 1965. 171 p.  
(MIRA 18:4)

VOL'PIN, Anatoliy Grigor'yevich; ZEYTLINOK, G.A., otv. red.;  
KOKORIN, Yu.I., red.

[Principal concepts and calculation of the reliability  
of a radio transmitter] Osnovnye poniatia i raschet  
nadezhnosti radiopredatchika. Moskva, Sviaz', 1965. 93 p.  
(MIRA 18:8)

I 25536-66 ENT(d)/EMP(1) IJP(c) GG/JF/BB

ACC NR: AP6014305

(N)

SOURCE CODE: UR/0003/65/000/012/0032/0035

AUTHOR: Kokorin, Yu. I.

ORG: Method. Study Group, Ministry of Communications SSSR (Uchabno-metodicheskiy kabinet Ministerstva svyazi SSSR)

TITLE: Stimulus for methodical search. [Resume of the First Conference of Communications Institutes and Technicians on Programmed Learning and the Use of Technical Devices in the Learning Process]

SOURCE: Vestnik vysshey shkoly, no. 12, 1985, 32-35

TOPIC TAGS: programmed teaching, teaching machine / OM-20 teaching machine

ABSTRACT: The conference was held at the Moscow Electrotechnical Institute of Communications under the auspices of the Ministry of Communications SSSR and was attended by representatives from Moscow, Leningrad, Novosibirsk, Kuybyshev, Sverdlovsk, Tashkent, Alma-Ata, Kiev, Khabarovsk, Kharkov, Minsk, and elsewhere. I. A. Zelenskiy of the Kharkov Communications Technicum spoke on the OM-20 teaching machine. Professor N. I. Chistyakov of the Moscow Electrotechnical Institute of Communications presented a somewhat negative view of teaching machines, urging instead improvements in lecture hall blackboards, soundproofing, lighting, furniture, etc. The need for better organization and centralization of research in teaching machines and programmed learning.

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ACC NR: AP6014305

was stressed. Much was said of the merits of programmed learning not based on machines. The participants decided to hold a conference on programmed learning for communications schools annually.

SUB CODE: 05,09/      SUBM DATE: 00/      ORIG REF: 000/      OTH REF: 000

Card 2/2

KOKORENA, A.

Workers' health should be taken care of and improved. Sov.  
profsoiuzy 7 no.9:36 My '59. (MIRA 12:8)

1. Bortkhirurg Krasnoyarskoy krayevoy klinicheskoy bol'nitsy.  
(Labor and laboring classes--Medical care)



USSR/Farm Animals - General Problems.

Q-1

Abs Jour : Ref Zhur - Biol., No 18, 1950, 83321

Author : Kokorina, E.P.

Inst : Institute of Physiology, AS USSR.

Title : Analysing Effects of Thyroid Hormones upon Physico-Chemical Properties of Lactic Fats. 1st Report. Effects of Experimental Hyper- and Hypothyroidism upon Synthesis Processes in Lactic Fats.

Orig Pub : Tr. In-ta fiziol. AN SSSR, 1955, 4, 109-122

Abstract : Two series of tests were performed on 7 cows taken from herds of the Scientific Research Station, Institute of Physiology im. I.P. Pavlov AS USSR. In the first series of tests, the cows were fed sunflower oil, which had a deteriorating effect upon the quality of lactic fat (LF). Iodized casein (I) feedings followed. In the second test

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USSR/Farm Animals - General Problems:

Q-1

Abs Jour : Ref Zhur - Biol., No 18, 1958, 83321

series, I feedings were given first and then LF. It was found that I softens and removes physicochemical property changes of LF, which sunflower oil has produced. Also, optimal doses of I were established, which affect processes of LF synthesis and LF quality the most. Increases of milk yields, achieved initially by large doses of I, may be sustained later by significantly lower dosages of the same preparation. The milk's fat content increases considerably thereby. In another test, effects of hypothyroidism upon LF synthesis were studied on 6 goats. From 2 of these goats the thyroid gland (TG) was removed 116 days before the test. In order to establish reaction differences caused by oil feedings in normal goats and goats without TG, all six goats were fed 1.25 gr of vegetable oil per 1 kg of live weight daily. Such feedings resulted in an increase of the iodine count by 4.9 units in normal goats, and by 7.6 units in thyroidectomized goats.

Card 2/3

KOMRINA, N.P.

~~Analysis of the effect of the thyroid hormone on physical and chemical properties of butterfat. Report no.2: Effect of air temperature and physical strain on the physical and chemical properties of butterfat.~~  
Trudy Inst.fiziol. 4:123-131 '55. (MIRA 9:4)

1.Laboratoriya fiziologii sel'skokhozyastvennykh zhivotnykh. Zaveduyushchiy  
I.A.Baryshnikov.

(Milk--Analysis and examination)(Thyroid gland)(Temperature--Physiological  
effect)

KONDRINA, E.P.

Use of certain tests in studying the fundamental characteristics of higher nervous activity in cattle. Trudy Inst.fisiol. 4:147-165 '55.

1.Laboratoriya fiziologii sel'skokhozyaystvennykh shivotnykh.Zaveduyushchiy I.A.Baryshnikov.  
(Nervous system) (Conditioned response) (Cattle)

KOKORINA, E. P.

Method of production of motor conditioned food reflexes in cattle.  
Fiziol.zhur. 41 no.1:96-100 Ja-F '55 (MLRA 8:4)

1. Laboratoriya fiziologii sel'skokhozyaystvennykh zhiivotnykh Institutu fiziologii im. I. P. Pavlova AN SSSR.  
(REFLEX, CONDITIONED,  
prod. in cattle)  
(CATTLE,  
prod. of conditioned reflexes)

COUNTRY : USSR  
 CATEGORY : Farm Animals. 2  
           Cattle.  
 ABS. JOUR. : RZhBiol., No. 3, 1959, No. 11990  
 AUTHOR : Kokorina, E. P.  
 INST. : AS USSR.  
 TITLE : The Reflex Characteristics of Milk Secretion  
           in Cows with Varying Mobility and Equilibrium  
           in Cortical Nervous Processes.  
 ORIG. PUB. : Dokl. AN SSSR, 1956, 108, No 4, 746-749  
 ABSTRACT : The reflexes of milk and fat flow were  
           studied in cows with different typological  
           characteristics of higher nervous activity at  
           evening milking time. Two-hundred-and-eighty-  
           six experiments were carried out on 9 highly  
           productive cows of the brown Latvian and Dutch  
           breeds with 2-8 lactations. As a result of  
           the daily repetition of a specific complex of  
           stimuli which were connected with the process  
           of milking, stable conditioned reflexes of

CARD:

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*Inst Physiology in I. P. Pavlov*  
*AS USSR*

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COUNTRY : USSR

CARD: APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000723710010

ABS. JOUR. : RZhBiol., No. 1959, No.

AUTHOR :  
 INST. :  
 TITLE :

ORIG. PUB. :

ABSTRACT : milk and fat flow were established in the  
           cows. Any violation of the usual stereotype  
           of stimuli (change of place, time, milking  
           sequence, replacement of the milking girl, etc.)  
           created an inhibition of reflexes. In order to  
           obtain maximal production it is imperative to  
           preserve stability of conditions during milking.  
           The different reaction of the cows to changed  
           milking conditions is not determined by breed,  
           age, time of lactation, magnitude of milk  
           yield and the milk's fat content. The inhibi-

CARD:

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USSR / Human and Animal Physiology. Nervous System.

T-10

Abs Jour : Ref Zhur - Biologiya, No 1, 1959, No. 3884

Author : Kokorina, E. P.

Inst : Not given

Title : Effect of Caffeine on Conditioned Reflex Activity in Cows

Orig Pub : Z. vyssh. nervn. deyat-sti, 1957, 7, No 5, 727-732

Abstract : In 12 cows, the strength of the stimulation process was established on the basis of reaction changes in the stereotype (of motor reflexes on a food reinforcement), made up of 2 positive, and of 2 differentiation reactions. Changes in the higher nervous activity (a beyond-the-limits inhibition) were noted by administration to the cows of 0.36 - 1.44 gm of pure caffeine. No correlation was found between the rapidity of appearance and consolidation of the first conditioned reaction and the

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*Lab. Physiol. Agricultural Animals  
Inst. Physiology in I. P. Pavlov AS USSR*

USSR / Farm Animals. Cattle.

Q

Abs Jour : Ref Zhur - Biologiya, No 2, 1959, No. 7376

Author : Kokorina, E. P.

Inst : Not given

Title : Higher Nervous Activity and Milk Productivity of Cattle

Orig Pub : Zh. obshch. biol., 1958, 19, No 2, 148-162

Abstract : It was established on 21 cows of various breeds that the level of milk productivity and the quantity of milk fat during lactation is higher in cows of a strong, well balanced, active type (I) and, with some exceptions, in cows of a strong unbalanced type (II) in terms of their higher nervous activity than in cows of a sluggish and weak type (III). Lactation curves of the (I) group

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*Inert Physiology in I. P. Pavlov*

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000723710010

USSR / Farm Animals. Cattle.

Abs Jour : Ref Zhur - Biologiya, No 2, 1959, No. 7376

reach a high level after parturition and become gradually lower; in cows of (II) group they proceed more steeply; lactation often terminates suddenly. In cows of the strong, well balanced, inert type the lactation curves decline slowly and gradually or staircase-like, in the cows of the (III) group the lactation curves are steadily maintained at a low level throughout the entire lactation period or decline sharply after having reached a high level after parturition. Daily milk yield fluctuations, the quantities of milk fat and the rapidity of milk discharge, changes within individual lactations are less intensive in cows with a high and medium high activity of cortical nerve processes than in cows with a

Card 2/3



KOKORINA, E.P.

Conditioned reflex of lactation and its inhibition in cows with various typological characteristics of higher nervous activity. Nauch. soob. Inst. fiziol. AN SSSR no.1:191-193 '59. (MIRA 14:10)

1. Laboratoriya fiziologii sel'skokhozyaystvennykh shivotnykh (zav. - I.A.Baryshnikov) Instituta fiziologii imeni Pavlova AN SSSR.  
(CONDITIONED RESPONSE) (LACTATION)

KIKORINA, N.P.

Characteristics of the lactation reflex in cows with cortical nervous processes of different strength. Trudy Inst.fiziol. 8: 46-50 '59. (MIRA 13:5)

1. Laboratoriya fiziologii sel'skokhozyaystvennykh shivotnykh (zaveduyushchiy - I.A. Baryshnikov) Instituta fiziologii im. I.P. Pavlova AN SSSR.

(LACTATION)

(TEMPERAMENT)

KOKORINA, E.P.

Method of catheterizing the udder. Fiziol.shur. 45 no.12:1499-1505  
D '59. (MIRA 13:4)

1. From the Laboratory for Physiology of Farm Animals, I.P. Pavlov  
Institute of Physiology, Leningrad.

(UDDER)

(CATHETERIZATION experimental)

KOKORINA, E.P.

Coordination of the secretory activity of individual quarters of  
the udder in cows. Fisiol. zhur. 47 no.1:56-63 Ja '61.

(MIRA 14:3)

1. From the Laboratory of the Farm Animal Physiology, Pavlov  
Institute of Physiology, Academy of Sciences of U.S.S.R., Leningrad.  
(LACTATION) (COWS)

KOKORINA, E.P.

Coordination of the lactating activity of individual quarters  
of the udder in cows. Fiziol.smr. 47 no.8:1024-1032 Ag '61.  
(MIRA 14:8)

1. From the Laboratory of Physiology of Farm Animals, I.P.Pavlov  
Institute of Physiology, Leningrad.  
(UDDER)

**KOKORINA, E.P.**

Higher nervous activity and milk productivity in cattle. Osv.  
AN SSSR. Ser.biol. no.6:905-914 N-D '61. (MIRA 14:11)

1. Institute of Physiology, Academy of the U.S.S.R., Leningrad.  
(COWS) (LACTATION) (NERVOUS SYSTEM)

KOKORINA, E.P.

Methodology of evaluating the properties of basic nervous processes in determining the type of higher nervous activity in animals by conditioned motor food reflexes. Zhur. vys. nerv. deiat. 13 no.2:361-370 M-Ap'63. (MIRA 16:9)

1. Laboratory of Farming Animals Physiology, Pavlov Institute of Physiology, U.S.S.R. Academy of Sciences, Leningrad.  
(NERVOUS SYSTEM) (CONDITIONED RESPONSE)

KOKORINA, E.P.

Possibility of applying some indices in the determination of the nature of the force of an excitation and the mobility of nervous processes in establishing the nervous system type. Zhur.vys.nerv. deiat 14 no.1:95-101 Ja-F '64. (MIRA 17:6)

1. Laboratory of Physiology and Biochemistry of Lactation, Pavlov Institute of Physiology, U.S.S.R. Academy of Sciences, Leningrad.



KOKORINA, E.P.

Evaluation of typological characteristics of nervous processes  
when comparing the results of several functional tests. Zhv.  
vys. nerv. delat. 14 no.3:532-536 My-Je '54. (MIRA 17:11)

1. Laboratory of Physiology and Biochemistry, Pavlov Institute of  
Physiology, U.S.S.R. Academy of Sciences, Leningrad.

KOKORINA, E.P.

Effect of various nutritional levels on nervous processes in  
animals in ontogenesis. Vop. pit. 22 no.6:66-67 N-D '63.

(MIRA 17:7)

1. Iz laboratorii fiziologii i biokhimii laktatsii (zav. - prof.  
I.A. Baryshnikov) Instituta fiziologii imeni I.P. Pavlova AN SSSR,  
Leningrad.

SOV/110-59-3-7/25

AUTHOR: Abramson, Yu.M., Engineer  
Kokorina, L.F., Engineer

TITLE: Methods of Suppressing Radio Interference on Suburban  
Electrified Railways (Metody podavleniya radiopomekh  
na prigorodnykh elektrifitsirovannykh uchastkakh  
zheleznnykh dorog)

PERIODICAL: Vestnik Elektromyashlennaya, 1959<sup>30</sup>, Nr 3, pp 31-34 (USSR)

ABSTRACT: On suburban lines where sub-station mercury-arc  
rectifiers are not grid-controlled most of the radio  
interference from electric railways originates in the  
rolling stock. The interference is propagated and  
radiated by the overhead conductor wires. Interference  
in the medium wave-length range can travel considerable  
distances but short and ultra-short wave-length  
interference is damped out quite quickly. The  
characteristics of interference originating in the main  
motors control equipment and pantographs of motor-coach  
stock are briefly described. The worst interference from  
motor-coaches is observed when they are running at high  
speed or are coasting at full speed. The suppression  
system for motor coaches differs from the systems that

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Methods of Suppressing Radio Interference on Suburban Electrified Railways

have been developed for various types of electric locomotives in that no attempt is made to suppress the interference from each individual component, rather the whole equipment is considered as a single equivalent source of interference. Because of this suppression systems can be made simpler and more reliable. The equivalent circuit of a motor coach section, considered as a source of radio interference, together with suppression circuits is given in Fig.1. Interference can be much reduced by proper design of pantographs, using carbon or carbon-metal inserts in the pantograph and increasing the elasticity of the suspension. At the present time the radio interference from motor coach sections is suppressed by connecting an inductance between the pantograph and the electrical equipment to increase the high frequency impedance, whilst the source of interference is shunted by a capacitor of sufficiently low high-frequency impedance over the required frequency range. A schematic circuit diagram of the arrangement used is given in Fig.2. The suppression circuit is

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Methods of Suppressing Radio Interference on Suburban Electrified Railways

tuned to a frequency of about 0.3 mc/s. The inductance required is about 500 microHenries. The construction of the inductance is described. Radio interference from traction substations is then considered, it originates mostly in the mercury-arc rectifiers and is at a frequency of 300 c/s and harmonics of this frequency. Very high interference levels are observed at frequencies of 0.16 - 0.55 Mc/s and little interference from traction substations is observed at 1.5 Mc/s. The level of interference from mercury-arc rectifiers, though somewhat dependent on the load, depends mainly on the control angles at which the rectifier is working. The level is much higher when grid control is used. In suburban sub-stations where grid control is not used it suffices to use capacitative suppression on the internal earthing circuits of the sub-station using condensers type KBG-P-6-1. The method of connecting the capacitors is explained. The importance of correctly locating and connecting some of the suppression equipment is discussed.

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SOV/110-59-3-7/15

Methods of Suppressing Radio Interference on Suburban Electrified  
Railways

In November - December, 1957 measurements were made of the effectiveness of interference suppression on a suburban electrified railway section. Both traction sub-stations supplying the section were provided with capacitors for interference suppression and two motor coach sections were provided with suppression equipment. Interference levels were measured with instruments types IP-12M and IP-14. Interference field levels over a range of frequency at a distance of 10 metres from the track when no suppression equipment is used are given in Fig.4 and the corresponding curves when suppression equipment is used, in both traction sub-stations and rolling stock, are given in Fig.5. In each case the upper and lower curves correspond respectively to the highest and lowest levels of interference measured during the tests. It will be seen that suppression is sufficiently effective to bring the interference below the required level over the frequency range of 0.16 - 1.5 Mc/s which is the important range. At frequencies above 20 Mc/s the interference is still

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Methods of Suppressing Radio Interference on Suburban Electrified  
Railways

above the permitted standard but this can only be  
overcome by improving the conditions of current  
collection. There are 4 figures.

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AYZBERG, R.Ye.; KOKORINA, L.K.; KOTS, V.G.

Buried extension of the meganticline in the southwestern Gissar Range. Sov. geol. 7 no.11:114-117 N '64. (MIRA 18:2)

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(RADIATION INJURY exper.)  
(BURNS exper.)

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**Stelloobraznye analogii:** trudy Tret'ego vostochnogo avstriyal'skogo Leningradskogo gosudarstvennogo universiteta, 1970) i now, reference on the Vitreous State, Transactions of the Third All-Union Conference on the Vitreous State, held in Leningrad-Novosibirsk, 1970) i now, Izd.-vo AN SSSR, 1950. 534 p. Errata ally inserted. 3,300 copies printed. (series: Iss. Trudy)

Sponsoring Agencies: Institut khimii oilkov (oil institute) near USSR. Vsesoyuznoye khimicheskoye obshchestvo imeni D.I. Mendeleeva and Gosudarstvennyy nauchno-issledovatel'skiy institut imeni S.I. Vavilova.

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**PURPOSE:** This book is intended for researchers in the science and technology of classes.

[illegible]

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KOKORINA, V. F.

"Some problems of glass structure according to data of anoxygenous glass investigations."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad,  
16-21 Mar 64.



2

Some physico-chemical properties of semiconducting glasses containing tin and lead. A. M. Efimov, V. F. Kokorina.

[New semiconducting glasses based on yellow arsenic and selenium. L. G. Ayo, V. F. Kokorina. (Not presented).]

Report presented at the 3rd National Conference on Semiconductor Compounds, Kishinev, 16-21 Sept 1963

"APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000723710010-0

SCILLING PHOTO OF THE VICTIM'S HEAD AND NECK, SHOWING THE PHYSICAL CHARACTERISTICS

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000723710010-0"

classen of the ... the only method which permits an accurate de-  
of the single-phase character of ...  
laboratories of ...

None

Card 2/2

L 12121-66 EWP(e)/EWT(m)/EWP(h) GS/NH

ACC NR: AT6000488

SOURCE CODE: UR/0000/65/000/000/0174/0177

AUTHOR: Kokorina, V. F.

ORG: Non

TITLE: Some problems of glass structure according to studies of oxygen-free glasses

SOURCE: Vsesoyuznoye soveshchaniye po stekloobraznomu sostoyaniyu. 4th, Leningrad, 1964. Stekloobraznoye sostoyaniye (Vitreous state); trudy soveshchaniya. Leningrad, Izd-vo Nauka, 1965, 174-177

TOPIC TAGS: glass, glass property, arsenic compound, germanium compound, selenium compound, antimony compound

ABSTRACT: Regions and glass formation were determined and data were obtained on the relation between properties and composition for a series of systems containing elements of the third, fourth, and fifth subgroups (in various combinations) with sulfur and selenium. Particular attention was given to the systems  $As-Ge-Se$ ,  $Sb-Ge-Se$ ,  $As_2S_3-Ge-Se$ , and  $As-Ge-Se + 5\% In, Ga$ . The thermal properties, density, microhardness, spectral characteristics, crystallizability, chemical stability, viscosity, refractive index, dispersion, and electric properties were studied. Other things being equal, changes in the properties of the glasses are determined by the change in the number of covalent bonds per unit volume of the glass; this is illustrated by differences in the systems  $Ge-Se$  (where  $Ge$  has four bonds) and  $As-Se$  (where  $As$  has three bonds). The presence of shoulders or inflections on property-

Card 1/2

L 12121-66

ACC NR: AT6000488

composition curves is attributed to the formation of new structural elements in the glasses. Experiments show that the presence of covalent bonds is necessary for glass formation to occur. It is also concluded that microheterogeneity is absent from the glasses studied. Orig. art. has: 2 figures.

SUB CODE: 07.11 / SUBM DATE: 23May68 / ORIG REF: 003

HW  
Card 2/2

I 12122-66

EMP(e)/EWT(m)/EWP(b)

GS/WH

ACC NR: AT6000489

SOURCE CODE: UR/0000/65/000/000/0177/0181

AUTHOR: Yelimov, A. M.; Kokorina, V. F.

ORG: None

TITLE: Some properties and structure of oxygen-free glasses containing heavy elements of Group IV of the periodic system

SOURCE: Vseioyuznoye soveshchaniye po stekloobraznomu sostoyaniyu. 4th, Leningrad, 1964. Stekloobraznoye sostoyaniye (Vitreous state); trudy soveshchaniya. Leningrad, Izd-vo Nauka, 1965, 177-181

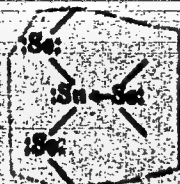
TOPIC TAGS: glass, arsenic compound, germanium compound, selenium compound, tin compound

ABSTRACT: The effect of tin and lead on glass formation and on some physicochemical properties was studied in oxygen-free As-Ge-Se glasses where Ge was gradually replaced by the heavier analogs. In all the systems, As-Ge-Sn-Se, As-Ge-Pb-Se, and As-Ge-Sn-Pb-Se, the introduction of even 5% or less tin or lead caused substantial changes in the position of the boundaries of glass formation as compared with the original As-Ge-Se system, and defects which increased with Sn and Pb content. Tin in glasses with excess Se forms  $\text{SnSe}_{4/2}$  tetrahedra, which are the same type of structural elements as those formed by germanium. In the As-Ge-Sn-Se system, as the selenium present becomes insufficient for the formation of  $\text{SnSe}_{4/2}$  tetrahedra, the following new structural elements appear:

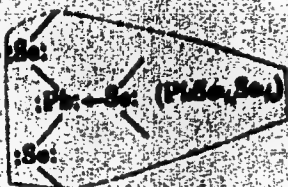
Card 1/2

L 12122-66

ACC NR: AT6001489



In the As-Ge-Pi-Se system, as the Ge content increases, similar structural elements are



formed. Orig. art. has: 3 figures.

SUB CODE: 07, 11 / SUBM DATE: 22May66 / ORIG REF: 002 / OTH REF: 003

Card 2/2

KOKORISH, N.P.

Distr: 4E2c/4E4c

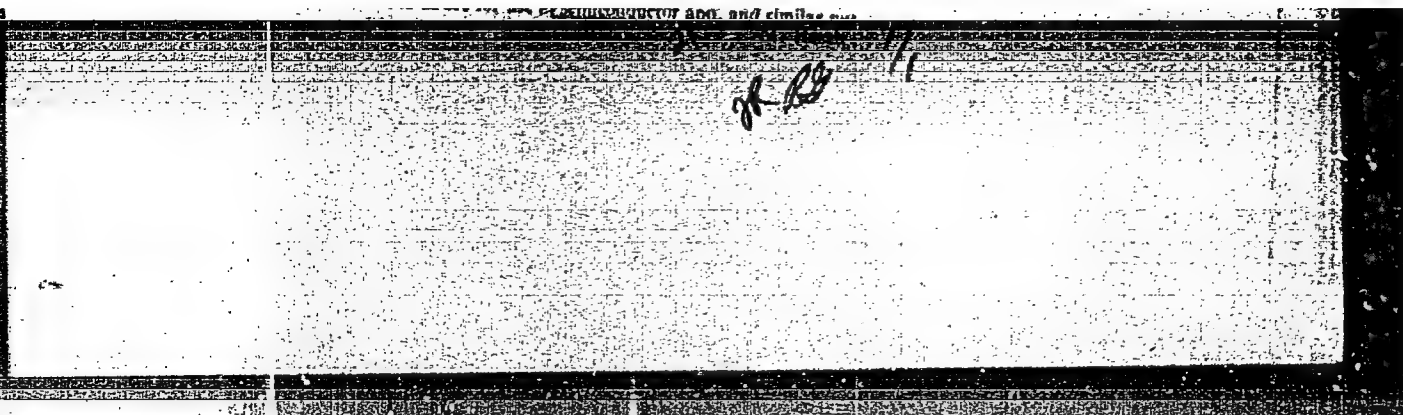
18 18 18  
Monocrylins of germanium and silicon with a prede-  
fined content of impurities. N. P. Kokorish, A. V. Kise-  
lov, and N. P. Kokorish. U.S.S.R. 107,430, Sept. 25, 1957.  
Adm. No. of 2-10 for 82 units in 1957.

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2



"APPROVED FOR RELEASE: 06/19/2000

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APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000723710010-0"

KOKORISH, N. P., SHAMBO, N. A., and SHEFTAL, N.N.

Institute of Crystallography, Acad. Sc., Moscow, "Some Peculiarities in Crystallization of Silicon and Germanium Films and Silicon Single Crystals" (Section 14-8) a paper submitted at the General Assembly and International Congress of Crystallography, 10-19 Jul 57, Montreal, Canada.

C-3,800,189

KoKorish, N. P.

AUTHOR: SHEFTAL', N.N., KOKORISH, N.P., KRASILOV, A.V. PA - 2359  
 TITLE: The Crystallization of Monocrystalline Layers of Silicon and Germanium from the Gaseous phase. (Kristallizatsiya monokristallicheskikh sloevkremniya i germaniya iz gazovoy fazy, Russian).  
 PERIODICAL: Izvestia Akad. Nauk SSSR, Ser. Fiz., 1957, Vol 21, Nr 1, pp 146 - 152 (U.S.S.R.)  
 Received: 4 / 1957 Reviewed: 5 / 1957

ABSTRACT: The present work investigates only the crystallization of silicon on silicon and germanium on germanium. According to a general survey of the problem the carrying out of the experiments is described. These experiments concerning pickling and breeding of non-orientated and orientated silicon- and germanium crystals disclose the real structure and the growth mechanism of these crystals.

Some conclusions: Crystallization from the gas phase is important for the production of monocrystalline layers with assumed constants or variable composition. Especially plane p-n transitions can be obtained in this manner. Crystallization of silicon and germanium at atmospheric pressure is obtained in the best and most simple manner by the decomposition of  $\text{SiCl}_4$  and  $\text{GeCl}_4$  in hydrogen at high temperatures. A monocrystalline growth of fragments of a micron of up to  $200\mu$  and a breeding surface of up to  $2,5\text{ cm}^2$ .

Card 1/2

PA - 2359

The Crystallization of Monocrystalline Layers of Silicon and Germanium from the Gaseous Phase.

was obtained for germanium. The practical suitability of the method was confirmed by the successful production of plates. These plates are suited for the production of triodes of the type p-n-i-p. On the occasion of crystallization from the gaseous phase at atmospheric pressure, growth not only takes place by means of single atoms or atom groups, but also by means of very small crystals. In spite of this fact the lattices thus produced possess a degree of perfection which is sufficient for technical purposes. (9 illustrations).

ASSOCIATION: Institute for Crystallography of the Academy of Science of the U.S.S.R.

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AVAILABLE: Library of Congress.

Card 2/2



36795

S/137/62/000/003/054/201

A052/A101

24.7400

AUTHOR: Kokorish, N. P.

TITLE: Crystallization of germanium on silicon and of silicon on germanium

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 4, 1962, 50, abstract 40326  
(V sb. "Rost kristallov. T. 2". Moscow, AN SSSR, 1959, 132 - 139)

TEXT: The process of growing Ge on Si and Si on Ge was studied. When growing Ge on Si, monocrystalline Si plates with an area of 0.3 - 1 cm<sup>2</sup> and 0.4 - 1 mm thick were used as a backing. Before applying Ge the plates were ground and polished and then pickled during 2 - 4 min in a boiling 30% NaOH solution. The application of Ge was made from GeCl<sub>4</sub> vapor by the hydrogen method at 750 - 940°C. It has been shown that at a temperature of < 800°C the silicon backing is not covered with Ge, and the precipitation process begins at 850°C whereby an unbroken coverage of the Si plate is not achieved. Ge precipitates in the form of black spots mainly at the boundaries of the steps, and no unbroken and firm precipitates have been produced. The application of Si on Ge was made by decomposing SiCl<sub>4</sub> with hydrogen at 900 - 920°C. Before applying Si film the Ge plates were ground, polished with chromium oxide and pickled in H<sub>2</sub>O<sub>2</sub> during 10 min. Unbroken films

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Crystallization of...

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A052/A101

1 micron thick were produced, representing grown together parallel Si crystals.

B. Turovskiy

[Abstracter's note: Complete translation]

Card 2/2

30539

S/564/61/003/000/010/029  
D207/D304

24.7000

**AUTHORS:** Kokorish, N. P., and Sheftal', N. N.  
**TITLE:** Morphology of polycrystalline silicon films  
**SOURCE:** Akademiya nauk SSSR. Institut kristallografii. Rost  
kristallov, v. 3, 1961, 351-358

**TEXT:** This and the two following papers describe the author's work carried out in 1954 on preparing germanium and silicon films from gas phase. The present paper deals with the morphology of polycrystalline silicon films prepared from gas phase by reducing  $\text{SiCl}_4$  with  $\text{H}_2$ ; the purpose of the study was to find why electrical properties of these films are variable. A stream of hydrogen, containing  $\text{SiCl}_4$  vapor, was passed at the rate of 5 cm/sec. through a quartz tube placed in an electrical resistance furnace. Silicon was deposited in a portion of the quartz tube and on objects placed in it. To study the mechanism of deposition of silicon a graphite block of 10 x 15 x 150 mm dimensions was placed

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S/584/61/003/000/010/029  
D207/D304

## Morphology of...

inside the quartz tube. The block was somewhat larger than the region where crystallization occurred (this region is known as the crystallization or reaction zone). To make the films more uniform, the temperature gradient in the quartz tube was small. The temperature distribution (T) in the crystallization zone, the variation of the film thickness (A) along the graphite block, and the mean magnitude of crystallites (S) of which the film was composed are all given. It was found that the film was very thin at the beginning of the crystallization zone, where it consisted of a very large number of small grains. Both the film thickness and the magnitude of single grains increased along the crystallization zone in the direction of gas flow. Towards the end of the crystallization zone, the mean size of grains still increased, but the film became discontinuous. Finally, at the end of the zone, single or small groups of large crystallites (up to 200  $\mu$  in size) were found instead of the film. Sections of the film at right angles to gas flow showed that at the beginning of the crystallization zone the film consisted of several layers of fine grains. In the middle of the crystallization zone, the number of these layers decreased. Towards the end of the zone, the film consisted

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Morphology of...

30539  
S/564/61/003/000/010/029  
D207/D304

of a single layer. The results obtained are discussed in terms of nucleation and of crystal growth velocities. It is concluded that portions of the films formed in the middle of the crystallization zone are suitable for electrical applications because of their single-layer (effectively monocrystalline) structure. Elsewhere, the films are either amorphous or fine-grained with intergrain layers (at the beginning of the crystallization zone) or are discontinuous (at the end of the zone). Unidirectional laminar flow of gas tends to produce films whose properties vary along their length in the crystallization zone. There are 7 figures and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: B. P. Ruth, I. C. Marinace and W. C. Dunlap, J. Appl. Phys., 31, 6, 995-1006, 1960; I. B. M. Journal, no. 3, 1980.

X

Card 3/3

30540

S/564/61/003/000/011/029  
D207/D304

24.7000

AUTHOR:

Kokorish, N. P.

TITLE:

Features of monocrystalline germanium film deposition from gas phase

SOURCE:

Akademiya nauk SSSR. Institut kristallografi. Rost kristallov, v. 3, 1961, 357-362

TEXT: The author describes a method of depositing germanium films on germanium plates. Deposition was carried out in a quartz tube heated to 600 - 920°C. Hydrogen, carrying  $\text{GeCl}_4$  vapor, was passed through the tube at the rate of 5 - 8 cm/sec. Above 700°C, the reaction  $\text{GeCl}_4 + 2\text{H}_2 = \text{Ge} + 4\text{HCl}$  produced free germanium which was deposited in a region of 5 - 7 cm length, known as the crystallization zone. Germanium plates placed in the crystallization zone became covered by germanium films. The author studied the position and length of the crystallization zone at maximum temperatures ranging from 655 to 920°C. The

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D540

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Features of...

longest crystallization zone was obtained at 800 - 850°C, and it was found that the zone length decreased with increase of the temperature gradient steepness. A second crystallization zone sometimes appeared in regions where temperature fell rapidly. Occasionally a crystallization zone consisted of several noncontiguous regions. To determine the quality of films as a function of the crystallization zone temperature, germanium plates cut along the (111) plane were etched in CP-4, washed, dried and placed in the crystallization zone in a graphite or quartz holder. The effect of concentration of  $\text{GeCl}_4$  vapor was also studied; this concentration was altered by varying the temperature of a  $\text{GeCl}_4$  vaporizer from -30 to +20°C. It was found that germanium films of maximum thickness were obtained on plates at a crystallization temperature of 800°C. To increase the length of the crystallization zone, the temperature distribution in it should be made uniform, and temperatures in the zone should be within the range 750 - 900°C. The thickness of germanium films increased with the duration of deposition and with the concentration of  $\text{GeCl}_4$  vapor in hydrogen; the thickness was not greatly affected by the

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D540

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D207/D304

Features of...

rate of flow of hydrogen which was varied from 15 to 100 liter/hour. The author points out that appearance of a second crystallization zone indicates that a gradual decrease of the rate of deposition with increase of temperature above 800°C and complete absence of deposition at 900°C or higher temperatures is due to partial or complete transfer of freshly formed germanium vapor outside the limits of the first crystallization zone. The rate of this transfer increases with the increase of temperature and with a lowering of saturation because germanium particles are then reduced and small particles are difficult to deposit. There are 9 figures.

X

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30541

S/564/61/003/000/012/029  
D228/D304

18.9500

**AUTHORS:** Sheftal', N. N., and Kokorish, N. P.  
**TITLE:** Reciprocal grafting of crystals of silicon and germanium  
**SOURCE:** Akademiya nauk SSSR. Institut kristallografii. Rost kristallov, v. 3, 1961, 363-370

**TEXT:** This work is a continuation of previous research by N. P. Kokorish (Ref. 6: Sb. Rost kristallov, v. 2, Izd. AN SSSR, 1959, 132-139) on the epitaxial grafting of Si and Ge crystals. The theory of epitaxial grafting was developed by P. D. Dankov (Ref. 3: Trud. 2-y konferentsii po voprosam korrozii, 11, 121, 1943) and later perfected by G. M. Bliznakov (Ref. 4: Godishn. na Sof. univ. Fiz. khim. fak., kn. 2. Khimiya, ch. I, II, 65-71, 1956); P. S. Vadilo (Ref. 2: Uchen, zap. Kurskogo gos. inst., 4, 143, 1957) and L. E. Collins et al have studied other aspects of this problem—the grafting of alkali-halide crystals on mica and the growth of Ge crystals on halite. Experimental procedure.

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30541

S/564/61/003/000/012/029  
D228/D304

Reciprocal grafting of...

Etched crystals of Ge and Si, cut along three planes, are respectively coated with films of crystalline Si and Ge by the method of N. N. Sheftal' et al (Ref. 8: Izv. AN SSSR, ser. fiz., 21, no. 1, 146-152, 1957)—the reduction of the corresponding chloride by hydrogen. (a) Grafting of Ge on Si: A 30 $\mu$ -thick layer of Ge, largely consisting of un-oriented semicrystalline aggregates, precipitates at 800°C; oriented crystals appear at 840° on (100), (110) and (111) surfaces, but the coating is patchy and peels off at higher temperatures. (b) Grafting of Si on Ge: A semicrystalline layer is deposited below 900°; close to the melting-point of Ge (937.2°) an oriented crystalline layer is formed with a thickness of up to 30 $\mu$ ; the coating is durable and has an n-type conductivity. The increase in the temperature—and the consequent decrease in the supersaturation—is believed to be responsible for the successive formation of hemi- and holo-crystalline growths. The absence of any Ge precipitate on Si above 900°, however, may be due to the decrease in the size of the Ge particles separating out in the gas stream; their deposition is thus impeded, and they are removed from the crystallization sphere in the gas stream. The grafting of Ge crystals probably

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D228/D304

Reciprocal grafting of...

requires a weaker degree of supersaturation than was achieved in these experiments. The greater ease with which Si accumulates on Ge results from the operation of bilateral tension—as compared with bilateral compression in the case of Ge grafting—on the accretive layer by the parent crystal's orienting forces, and so the growth of Si shifts to the region of its higher supersaturation. In conclusion, the authors stress the need to perfect the crystallization method so that a homogeneous and continuous coating of Ge may be obtained on Si. There are 7 figures and 9 references: 6 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: L. E. Collins et al, Proc. Phys. Soc., B, 65, 10, 394, 825 (1952); F. I. Hassion et al, J. Phys. Chem., 59, 1076, 1955.

Card 3/3



18.7530 1145  
9.4300 (and 1035, 1143)

20109

S/181/61/003/002/007/050  
B102/B204

AUTHORS: Kurov, G. A., Sheftal', N. N., and Kokorish, N. P.

TITLE: Investigation of coarse-crystalline germanium layers obtained by pyrolysis from the gaseous phase

PERIODICAL: Fizika tverdogo tela, v. 3, no. 2, 1961, 370-372

TEXT: Thin, fine-crystalline germanium layers are characterized by a very low resistivity, and have usually p-type conductivity. According to published data, germanium layers with crystals of  $\approx 5 - 10\mu$  and more, should depend on the size of the crystals and on the impurities with respect to their properties. In order to check this, the authors investigated the electric properties of  $10 - 50\mu$  thick germanium layers, which had been vaporized on quartz backings, by means of the so-called hydrogen method. Hydrogen was conducted over liquid  $\text{GeCl}_4$  and later into a quartz tube heated to  $700-900^\circ\text{C}$ ; the reaction  $\text{GeCl}_4 + 2\text{H}_2 \rightarrow \text{Ge} + 4\text{HCl}$  took place. The excess in hydrogen, the hydrogen chloride, and small quantities of Ge and  $\text{GeCl}_4$  were drained off into the atmosphere, the main

Card 1/4

20109

S/181/61/003/002/007/050  
B102/B204

## Investigation of coarse-crystalline...

part of the germanium crystallized on quartz. Besides quartz, also polished graphite backings were used. All backings were previously subjected to vacuum heat treatment. In the case of crystallization times of from 20 minutes to 1 hr, layer thicknesses of  $3-5\mu$  and up to  $50\mu$  were produced. The  $\text{GeCl}_4$  used was spectrally pure. The structure of the crystallization zones was non-uniform - at the beginning of the zone the crystals were not larger than  $\approx 0.1\mu$ , in the middle part  $5-10\mu$ , and at the end of the zone they were  $40-50\mu$ ; several crystals attained up to  $200\mu$ . It was found that the resistivity of germanium increases exponentially with increasing size of the crystallites. The layers crystallized onto graphite showed a dependence of the kind of conductivity on the size of the crystallites. Crystallites of the size of  $0.1\mu$  were of p-type conductivity; at  $3-5\mu$  the thermo-emf passed from positive to negative values, and the coarse-crystalline layer, beginning with  $3-5\mu$ , had n-type conductivity (at room temperature). The layer structure on graphite was equal to that on quartz, with the exception that the germanium crystals on quartz, independent of the size of the crystallites, showed p-type conductivity. Layers of thickness  $10-20\mu$  had a resistivity of  $\rho = 28-35$  ohm-cm, which is by three orders of magnitude higher

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S/181/61/003/002/007/050  
B102/B204

Investigation of coarse-crystalline...

than the  $\rho$  of the fine-crystalline layers. Heating of 2-3 hr at 500-600°C diminished the resistivity of these layers to 25 ohm-cm. Experiments were also made in order to alloy the germanium layers formed with impurities. For this purpose, spectrally pure phosphorus chloride (donor) and borobromide (acceptor) were used. The introduction of phosphorus was followed by the occurrence of n-type conductivity, which was in all cases independent of the size of the crystallites; boron was analogously followed by p-type conductivity. Both kinds of impurity decreased the resistivity of the coarse-crystalline layer to 5-6 ohm-cm. The effect produced by impurities upon the kind of conductivity was exactly the same as in the case of macroscopic monocrystals. The results of the investigations show agreement with the assumptions made in Ref. 6 concerning the pyrolysis of germanium layers. The difference in crystallite size in the crystallization zone is explained by the fact that in the mixture of  $\text{HCl} + \text{H}_2$  and germanium vapor the crystallization centers accompany the flow, depart, whereby the number of remaining crystals is reduced, and, consequently, increased in size. That is why, at the beginning of the crystallization zone, small crystals occurred, which were

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20109

Investigation of coarse-crystalline...

S/181/61/003/002/007/050  
B102/B204

followed by larger and larger ones. G. I. Spiridonova took part in the measurements. There are 3 figures and 7 references: 4 Soviet-bloc and 3 non-Soviet-bloc. X

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography, AS USSR)

SUBMITTED: April 4, 1960

Card 4/4

41099

S/058/62/000/008/134/134  
A160/A101

184500

AUTHOR: Kokorish, N. P.

TITLE: The crystallization of germanium on silicon and silicon on germanium

PERIODICAL: Referativnyy zhurnal, Fizika, no. 8, 1962, 31, abstract 8-4-61y  
(In collection: "Rost kristallov. T. 2". Moscow, AN SSSR, 1959, 132 - 139)

TEXT: The conditions under which a mutual growth of germanium and silicon would take place were experimentally investigated. Attempts to grow-on germanium on silicon at temperatures of  $< 800^{\circ}\text{C}$  failed. At temperatures higher than  $850^{\circ}\text{C}$  and up to the smelting point of germanium ( $958^{\circ}\text{C}$ ) an oriented but not continuous growth of germanium on silicon was obtained on plane (111). It was possible to grow-on a continuous layer of germanium on silicon on plane (110), which only unstably adhered to the sublayer. Attempts to grow-on silicon on germanium proved to be successful only within a short range of temperatures from  $880^{\circ}\text{C}$  to the sublayer smelting point. The obtained silicon layers were continuous.

[Abstracter's note: Complete translation]  
Card 1/1

Ye. G.

41653

S/058/62/000/010/063/093

A061/A101

24.7000

AUTHOR: Kokorish, N. P.

TITLE: Crystallization of germanium on silicon and of silicon on germanium

PERIODICAL: Referativnyy zhurnal, Fizika, no. 10, 1962, 25, abstract IOE192  
(In collection: "Rost kristallov. T. 2", Moscow, AN SSSR, 1959,  
132 - 139)

TEXT: The conditions for the intergrowth of Si and Ge were investigated experimentally. The deposition of Ge on Si did not succeed at temperatures lower than 800°C. Above 830°C and up to the melting point of Ge an oriented, though not continuous, deposition of Ge on Si took place in the (111) plane, while on the (110) plane it was possible to build up on Si a Ge film being continuous though not adhering stably to the backing. The deposition of Si on Ge succeeded only in a narrow temperature range from 880°C to the melting point of the backing. The Si films obtained were of the continuous kind.

Ye. Givargizov

[Abstracter's note: Complete translation]

Card 1/1

28 (2) FRANK I BOOK EXPLANATIONS 207/2553

Abstracts with 2000. Further bibliographies

Book 1, 2 (North of Crystals, Vol. 2) Moscow, 1979. 256 p. 2,000 copies printed.

Prof. M. A. V. Smolnikov, Academician, and V. E. Smolnikov, Doctor of Geological and Mineralogical Sciences; M. of Publishing House: E. E. Akhmedovskiy, Sub. M. S. V. Polyakov.

FOREWORD: This book is intended for scientists and researchers engaged in crystallography and in growing industrial monocrytals.

CONTENTS: This is the second of two volumes on crystal growth. The first volume contains the material delivered at the First Congress on Crystal Growth, held in Moscow in 1976. The second volume contains the material of the Second Congress, held in Leningrad in 1978. These studies reflect the development of Soviet science in crystallography in the period following the first congress. The studies contain some essentially new results obtained by Soviet scientists. The editors express the hope that these studies will aid the efforts of Soviet scientists engaged in studying the process of crystal growth and in growing industrially valuable monocrytals. In preparation of the second volume, the authors are glad at the aid of each article.

1. L. E. Smolnikov and V. E. Smolnikov. The Second and Third First of Soviet Crystallography. 6

2. L. E. Smolnikov and V. E. Smolnikov. Crystallography of Crystals and Monocrytals. 6

3. L. E. Smolnikov and V. E. Smolnikov. Crystallography of Crystals and Monocrytals. 70

4. L. E. Smolnikov and V. E. Smolnikov. Crystallography of Crystals and Monocrytals. 70

5. L. E. Smolnikov and V. E. Smolnikov. Crystallography of Crystals and Monocrytals. 70

6. L. E. Smolnikov and V. E. Smolnikov. Crystallography of Crystals and Monocrytals. 70

7. L. E. Smolnikov and V. E. Smolnikov. Crystallography of Crystals and Monocrytals. 70

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10. L. E. Smolnikov and V. E. Smolnikov. Crystallography of Crystals and Monocrytals. 70

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25. L. E. Smolnikov and V. E. Smolnikov. Crystallography of Crystals and Monocrytals. 70

26. L. E. Smolnikov and V. E. Smolnikov. Crystallography of Crystals and Monocrytals. 70

27. L. E. Smolnikov and V. E. Smolnikov. Crystallography of Crystals and Monocrytals. 70

28. L. E. Smolnikov and V. E. Smolnikov. Crystallography of Crystals and Monocrytals. 70

29. L. E. Smolnikov and V. E. Smolnikov. Crystallography of Crystals and Monocrytals. 70

30. L. E. Smolnikov and V. E. Smolnikov. Crystallography of Crystals and Monocrytals. 70

24:7100

78120

SOV/70-5-1-29/30

AUTHORS: Kokorish, Ye. Yu., Sheftal', N. N.

TITLE: Growth of Dislocation-Free Single Crystals of Germanium. Brief Communications

PERIODICAL: *Kristallografiia*, 5, No. 1, pp. 156-57, 1960.  
Dislocation density in artificially grown crystals of germanium varies from  $10^3$  to  $10^5$  per  $\text{cm}^2$ . If the crystals, growing while pulled from the melt, are heated additionally and cooled off at a very low rate, they can be obtained dislocation-free. Using the method suggested by W. C. Dasch, and seeds in which the dislocation density did not exceed  $10^3$  per  $\text{cm}^2$ , the authors produced several crystals, up to 50 g each, and measured their dislocation density and other properties. The results are compiled in Table A.

Institute of Crystallography, Acad. Sci. USSR.

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Growth of Dislocation-Free Single Crystals  
of Germanium. Brief Communications

78120  
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Key to Table A: (a) Specimen number; (b) Dislocation  
density per  $\text{cm}^2$ ; (c) Resistivity, ohm cm; (d) Diffusion  
length, mm.

Table A

(a)	(b)	(c)	(d)
B-797	12	1,4	1,1
B-798	3	1,3	1,1
B-799	0	0,8	0,6
B-831	0	0,6	0,6
B-826	$3 \cdot 10^2$	1,0	0,6
B-873	$5 \cdot 10^3$	0,6	0,4

E. V. Myakinenkova and V. K. Bichev are acknowledged  
for assistance. There are 2 figures; 1 table;  
and 6 references, 2 U.S., 1 U.K., 1 German, 1 Dutch,  
1 Soviet. The U.S. and U.K. references are: W. C.  
Dasch, Electr. Eng., XII, 1156, 1958; A. D. Rossi,  
RCA Rev., 19, 349-386; E. Billing, Proc. Roy. Soc.,  
235, 37, 1956.

~~Card 73~~

S/070/60/005/005/014/017<sup>84125</sup>  
E132/E360

9.4177  
AUTHOR: Kokorish, Ye.Yu.

TITLE: Influence of the Peltier Effect on the Perfection of Single Crystals of Germanium Obtained by the Method of Withdrawing a Crystal Seed from a Melt

PERIODICAL: Kristallografiya, 1960, Vol. 5, No. 5,  
pp. 815 - 816

TEXT: When a single crystal is grown by withdrawing a seed crystal from a melt one of the important conditions influencing growth is the way in which the latent heat of solidification is removed from the liquid/solid interface. Inadequate removal of heat can lead to fluctuations in the rate of growth. This produces imperfections in the crystal. The application of the Peltier effect in semiconductors for this purpose was suggested by Ioffe (Zh.tekh.fiz., Vol. 26, 478, 1956). In the case of semiconductors with n-type conductivity the absorption of heat in the crystallisation front proceeds when the flow of electrons is from the melt to the crystal, i.e. when the crystal is made positive with respect to the melt. This is called the forward current and a reverse current will generate heat at the interface.

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84125

S/O70/60/005/005/0147017

E132/E360

Influence of the Peltier Effect on the Perfection of Single Crystals of Germanium Obtained by the Method of Withdrawing a Crystal Seed from a Melt

The influence of a forward current on the crystallisation of germanium was studied experimentally. Crystals of Ge<sup>7</sup> were grown in an atmosphere of H<sub>2</sub> with the seed crystal set along the

[111] direction, a rate of withdrawal of 1 mm/min and a rate of rotation of the crystal of 60 rpm. A constant current was passed through the crystal from a rectifier. Plates were cut transversely from the rod-crystal resulting at different distances from the seed. They were etched in a boiling solution of 12 g KOH and 8 g K<sub>3</sub>Fe(CN)<sub>6</sub> in 100 g water and the density of the dislocations was counted. Longitudinal and transverse plots of the dislocation density distribution were made. Both types of curves showed minima (at about 2.5 cm from the seed and at the axis of the 1.4 cm dia. crystal). It is concluded

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84125

S/070/60/005/005/014/017  
E132/E360

Influence of the Peltier Effect on the Perfection of Single  
Crystals of Germanium Obtained by the Method of Withdrawing  
a Crystal Seed from a Melt

that the density of dislocations is more uniform for these crystals  
grown with a current than it would have been without a current and  
that the method is of practical use.  
There are 2 figures and 6 references: 1 Soviet, 1 German and  
4 English.

SUBMITTED: January 26, 1960

Card 3/3

86266

S/053/60/072/003/003/004  
B019/B056

24.7700 (1043, 1143, 1559)

AUTHORS: Kokorish, Ye. Yu. and Sheftal', N. N.

TITLE: Dislocations in Semiconductor Crystals

PERIODICAL: Uspekhi fizicheskikh nauk, 1960, Vol. 72, No. 3,  
pp. 479 - 494

TEXT: The authors have studied the effect of dislocations upon the electrical properties of semiconductor crystals, the formation of dislocations in growing semiconductor crystals, and the action of dislocations upon semiconductor instruments. In the first part, the lattice distortion caused by dislocations and the change in the forbidden band width connected herewith is discussed. Furthermore, the space charge and the resulting decrease of carrier mobility, as well as the increase of its scattering and the increase of carrier recombination are discussed. The results obtained by non-Soviet scientists concerning the recombination properties of dislocations, which are formed in growing crystals, are discussed, after which the interaction of dislocations with impurity atoms is described. Thus, it is shown that the formation of an impurity

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86266

Dislocations in Semiconductor Crystals

S/053/60/072/003/003/004  
B019/B056

atmosphere by dislocations leads to a decrease of the effective carrier trapping cross section, and further, the impurity atoms render the shift of dislocations more difficult. Of the methods of visualizing dislocations, the metallographic method, the X-ray method, and the "decoration" method are discussed in detail. For the first-mentioned method, the composition of etching agents for germanium, silicon, Ge-Si alloys and InSb are given in a table, and the etching techniques are discussed. The X-ray method makes it possible to determine the dislocation density without destroying the specimen. The method of "decoration" by precipitation of copper on dislocations, introduced by Dash, and observation in infrared light are described in detail. Five causes for the occurrence of dislocations in growing crystals are discussed in detail: 1) As a consequence of plastic deformation. 2) As a consequence of a disc-shaped accumulation of vacancies in the crystal round the crystallization front, and their subsequent destruction under the formation of a dislocation loop. 3) As a consequence of impurity trapping. 4) As a consequence of the intergrowth of a dislocation from the inoculation. 5) As a consequence of fluctuations of the growth rate. Finally, the results of papers are

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Dislocations in Semiconductor Crystals

S/053/60/072/003/003/004  
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discussed, which deal with the action of dislocations upon the characteristics of semiconductor instruments. It was found that for the production of instruments capable of withstanding a high inverse voltage, semiconductors with the lowest possible dislocation density must be used. There are 6 figures, 2 tables, and 81 references: 12 Soviet, 3 Japanese, 5 German, 2 British, 1 Dutch, 1 Italian, and 53 US.

Card 3/3

S/564/61/003/000/013/029  
D207/D304

**AUTHORS:** Kokorish, Ye. Yu., and Myakinenkova, E. V.

**TITLE:** On the problem of determining dislocation density by chemical etching of germanium monocrystals

**SOURCE:** Akademiya nauk SSSR. Institut kristallografii. Rest. kristallov, v. 3, 1961, 371, 379

**TEXT:** The authors determined dislocation densities on the surface of germanium monocrystals using four chemical etchants; the purpose of the work was to throw some light on the contradictions in published results. The etchants were: CP-4 (2 - 5 min. etching duration), potassium ferricyanide solution (8g  $K_3[Fe(CH)_6]$ , 12 g KOH, 100 cm<sup>3</sup> H<sub>2</sub>O ; 1 - 5 min. in boiling solution) ; iodine solution (20 cm<sup>3</sup> HNO<sub>3</sub> , 16 cm<sup>3</sup> HF, 8 cm<sup>3</sup> CH<sub>3</sub>COOH, 0.3 mg I ; 6 - 15 min. etching) ; and No. 2 solution (10 cm<sup>3</sup> HF, 10 cm<sup>3</sup> H<sub>2</sub>O<sub>2</sub>, 40 cm<sup>3</sup> H<sub>2</sub>O ; 3 - 10 min.

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On the problem...

S/564/61/003/000/013/029  
D207/D304

etching) . Germanium was in the form of plates cut along (111) or (100) planes from a monocrystal at right angles to its growth axis. Before etching, the plates were ground with M-20 (M-20) powder, chemically polished in hot  $\text{HF} + \text{HNO}_3 + \text{H}_2\text{O}$  (5:5:1) solution for 10 - 15 sec., washed in doubly distilled water and dried. Etch pits were photographed at magnifications ranging from 120 to 450. Typical etch-pit densities for the same sample were (in  $\text{cm}^{-2}$ ):  $9 \times 10^3$  for the ferricyanide etchant,  $6 \times 10^3$  for CP-4,  $3 \times 10^3$  in the iodine solution, and  $4 \times 10^3$  in the etchant No. 2. The highest density of dislocations was revealed by the ferricyanide etchant; it was nearly always equal to the sum of densities obtained with CP-4 and with the iodine etchant. It is suggested that the ferricyanide solution reveals edge, screw and mixed dislocations. The density of etch pits at mosaic block boundaries was the same in all the four etchants. Acknowledgments are made to N. N. Sheftal' for his advice and to V. K. Bichev for his help in experiments. There are 9 figures, 3 tables and 9 references: 2 Soviet-bloc and 7 non-Soviet-bloc. The 4

Card 2/3

On the problem...

CIA-RDP86-00513R000723710010-0"

S/564/61/003/000/013/029  
D207/D304

most recent references to the English-language publications read as follows: A. D. Kurtz, S. A. Kulin and B. L. Averbach, Phys. Rev., 101, 1285, 1958; J. Hornstra, J. Phys. a. Chem. Solids, 5, 129, 1958; W. Bardsley, R. L. Bell, B. W. Straughan, J. Electr. a. Control, 5, 19, 1958; R. G. Rhodes, K. O. Batsford, J. Electr. a. Control., 3, 403, 1957.

Card 3/3



18-9500

30543

S/584/61/003/000/015/029  
D207/D304

AUTHORS: Kokorish, Ye. Yu., and Sheftal', N. N.

TITLE: On the problem of growing germanium monocrystals free of dislocations

SOURCE: Akademiya nauk SSSR. Institut kristallografi. Roat Kristallov, v. 3, 1961, 388-394

TEXT: The authors describe experiments carried out in 1957-58 on preparing germanium monocrystals free of dislocations. The purpose of the work was to obtain material from which better semiconductor devices could be made. A brief discussion of how dislocations are formed is followed by details of experimental procedure. Polycrystalline ingots of zone-purified germanium of  $> 30 \text{ ohm.cm}$  resistivity were used as the raw material. Monocrystals were grown by Czochralski's technique of pulling from the melt in a hydrogen atmosphere. The rate of pulling was varied from 0.5 to 4 mm/min. A seed crystal was rotated at 50 - 100 rpm.

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30543

On the problem of...

S/584/61/003/000/015/029  
D207/D304

most recent references to the English-language publications read as follows: W. C. Dash, J. Appl. Phys., 29, 736, 1958; P. Penning, Philips Res. Repts, 13, 79, 1958; F. D. Rosi, RCA Rev., 19, 349, 1958; J. G. Gressel, J. A. Powell, Progress in Semiconductors, II, 137, London, 1957.

X

Card 3/3

37967

S/137/62/000/005/058/150  
A006/A101

24.7500

AUTHOR: Kokorish, Ye. Yu.

TITLE: The effect of cooling conditions upon the formation of dislocations in germanium crystals

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 5, 1962, 38, abstract 50253 (V sb. "Rost kristallov, v. 2", Moscow, AN SSSR, 1959, 120-125)

TEXT: To investigate the distribution of dislocations along an ingot, several Ge single crystals of proper conductivity were grown by the method of pulling from the melt. Orientation of the primer was [111], pulling rate 1 mm/min, the rotation rate of the crystal during its growth was 60 rpm. After drawing the ingots from them, perpendicularly to the growth axis at different distances from the primer, plates were cut to determine the density of dislocations. The plates were ground on glass with the aid of micropowder suspensions M-10 and M-14, in order to remove a layer of 70 - 80  $\mu$ . After chemical polishing, the specimens were etched during 3 minutes in a boiling solution of 12 g KOH and 8 g  $K_2[Fe(CN)_6]$  in 100 cm<sup>3</sup> H<sub>2</sub>O, with subsequent washing in distilled water and drying. The density of the etching pits is greater at the initial

Card 1/2

37968

8/137/62/000/005/060/150  
A006/A101

24.7500

AUTHORS: Kokorish, Ye. Yu., Myakinenkova, E. V.

TITLE: On the problem of determining the density of dislocations in germanium single crystals by chemical etching

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 5, 1962, 39-40, abstract 50260 (V sb. "Rost kristallov, v. 3", Moscow, AN SSSR, 1961, 371-379, Diskus. 501-502)

TEXT: A comparison was made of the density of etching pits, revealed with different etching agents on the same specimens along the crystal. The shape and dimensions of the etching pits were determined. The following etching agents were used: 1) CP-4 (SR-4) composed of  $\text{HNO}_3$  (25 cm<sup>3</sup>) + HF (15 cm<sup>3</sup>) +  $\text{CH}_3\text{COOH}$  (15 cm<sup>3</sup>) + Br; etching time was 2-5 min; 2) ferrous cyanide composed of  $\text{K}_3[\text{Fe}(\text{CN})_6]$  (8g) + KOH (12 g) +  $\text{H}_2\text{O}$  (100 cm<sup>3</sup>) with 1 - 5 min etching time in a boiling solution; 3) iodine composed of  $\text{HNO}_3$  (20 cm<sup>3</sup>) HF (16 cm<sup>3</sup>) +  $\text{CH}_3\text{COOH}$  (8 cm<sup>3</sup>) + I (0.3 mg) with 6 - 15 min etching time and 4) No. 2, composed of HF (10 cm<sup>3</sup>) +  $\text{H}_2\text{O}_2$  (10 cm<sup>3</sup>) +  $\text{H}_2\text{O}$  (40 cm<sup>3</sup>) with 3 - 10 min etching time. Prior to etching, the specimen surface was ground on glass with micropowder M-20,

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